

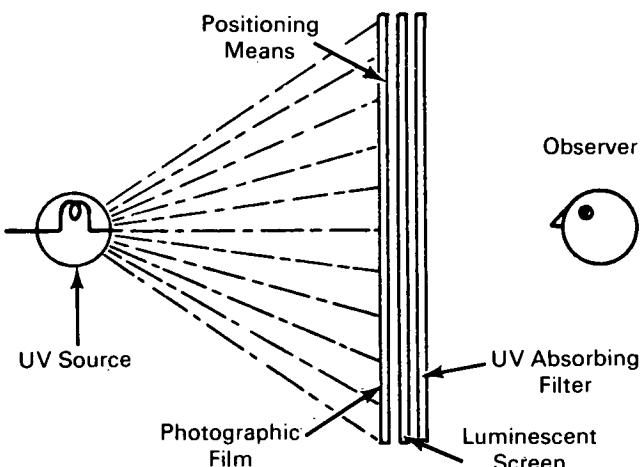
# NASA TECH BRIEF



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## Luminescent Screen Composition and Apparatus

A luminescent screen composition has been developed upon which the photographically produced image is projected, usually from a transparency, by means of ultraviolet light. The composition includes a mixture of a plurality of phosphors whose spectral emissions are different. When excited, the phosphors emit their characteristic color.



The luminescent composition for the tube face of conventional cathode ray tubes (CRT's) is deposited as selectively positioned dots. This conventional arrangement of dots necessitates the use of an aperture mask and multiple electron guns. In the present invention, the composition is a mixture of nonlinear phosphors and linear phosphors. Thus, the phosphor dot pattern, the shadow mask, and two of the three electron guns are eliminated by substituting an overall smooth coating of a mixture of the linear and nonlinear phosphors and a single gun. By varying the electron beam exciting current, different colors become visible. With the mixture of linear phosphors and non-

linear phosphors, the red predominates at a current of one microampere and the green predominates at a current of ten microamperes. Many different hues result with the varying electron beam currents. The figure illustrates apparatus employing the novel composition in a luminescent screen.

The practice of the present invention affords the display of polychromatic luminescent images under extremely reliable conditions. Over the brightness range available with a monochromatic transparency, it is possible to differentiate approximately ten brightness levels. However, when viewing a polychromatic image, it is possible for an observer to discriminate about 200 separate hues at a constant brightness level. Thus, image displays are available to indicate in different colors, giving a better discrimination of the objects being viewed. The simplicity of producing the multicolor display screens and their reliability represent important advantages in the use of this apparatus.

### Note:

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### Patent status:

This is the invention of a NASA employee and a patent application has been filed. Inquiries concerning license rights may be made to the inventor, Mr. Edwin H. Hilborn, through NASA Headquarters.

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